REPORT ON

A

WATER SUPPLY DEVELOPMENT

PROGRAMME FOR

THAMESFORD AREA

JUNE 1960

Parliament Buildings

WATER SUPPLY DEVELOPMENT PROGRAMME FOR THAMESFORD AREA

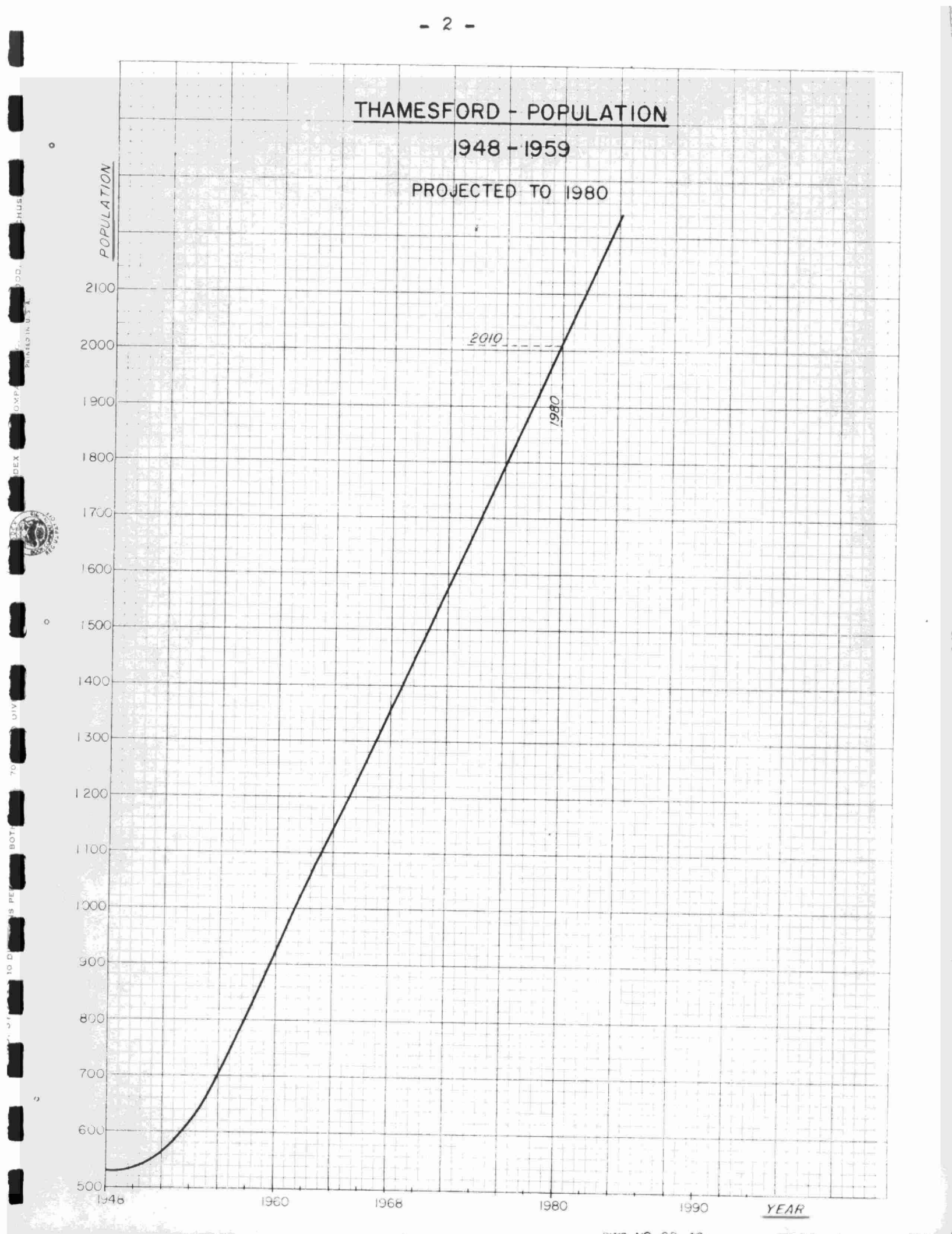
POPULATION & WATER REQUIREMENTS

The population of Thamesford in 1959 was 878. During the period from 1948 to 1959 the population increased 66%. With increased emphasis on suburban living for the London area, an even greater population increase can be expected in the future. From the attached graph the population is estimated at 2000 for the year 1980.

The main reason for the rapid growth at Thamesford is due to its location. Although the Police Village has no industry except for a turkey farm and processing plant, it is only some 15 miles distant from the centre of London. Many London workers have now settled in Thamesford.

If this trend to suburban living continues Thamesford's population can be expected to continue increasing at a rapid rate.

A municipal water system should be designed to meet the requirements for the next 20 years. Therefore the system should be designed for supplying some 160,000 gallons daily.


THAMESFORD - POPULATION
1948 - 1959
PROJECTED TO 1980
POPULATION
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
2010
1980
1948
1960
1968
1980
1990
YEAR

EXISTING WATER SUPPLIES

Most of the water consumers in Thamesford obtain their water from three privately owned supplies. There are also a number of smaller individual supplies. The three main privately owned supplies are described below:

I THAMESFORD WATER SUPPLY COMPANY

The owners of the supply, which is obtained from 2 wells, are Mr.A.Hogg, Mrs.J.M.McKay and Mr.T.R.Nancekivell.

(1) Wells

Well #1 is 178 ft. deep with the water pumped through a 3 inch galvanized pipe to the reservoir.

Well #2 which is located approximately 150 ft. from #1 well, is 234 feet deep. A submersible pump delivers the water to a reservoir at a reported rate of approximately 3000 G.P.Hour.

(2) Treatment

Hydrogen sulphide treatment is provided by baffle type aeration in a 25,000 gallon concrete reservoir.

(3) Pressure Tank

A high lift pump delivers the water from the reservoir to a 1000 gallon pressure tank. The system operates between 40 and 60 psi. pressure.

(4) Distribution System

The distribution system consists of galvanized pipe 1½" to 3" diameter(see map for location). The system is approximately 35 years old and a flat rate of $20.00 per year is

charged to each of the 200 customers.

II HOSSACK SUPPLY

This well supply owned and operated by Mr.D.Hossack supplies approximately 100 services. This system is 10 years old.

(1) Wells

There are two wells. One is 100 feet deep with a low lift pump capacity of 750 G.P.Hour to the reservoir.

The other well is 110 feet deep equipped with a submersible pump capable of delivering 4000 G.P.Hour to the reservoir.

(2) Treatment

Some aeration is provided due to the water falling freely from the end of the low lift discharge pipe to the reservoir.

(3) Reservoir

A 250 G.P.M. high lift pump delivers the water from the 30,000 gallon two compartment concrete reservoir to a 1,000 gallon pressure tank. The pressure tank operates between 28 and 60 psi. pressure.

(4) Distribution System

The distribution system consists of 2 inch diameter galvanized pipe. See map for area served. The 100 services are metered with a charge of $24.00 per year for the first 30,000 gallons and $1.50 per 1000 gallons for water in excess of this.

III NOAD WATER SUPPLY

This water supply system is owned and operated by Mr.A.Noad, and water is obtained from two wells.

(1) Wells

A 120 foot deep well with 9000 G.P.D. capacity was drilled in 1956. However, due to the sulphur content this well is used for standby purposes only.

A 250 foot deep well with 50 G.P.M. capacity is used as the main source. This well is equipped with a submersible pump.

(2) Treatment

Both wells discharge to a two compartment covered concrete reservoir where the water falls over wooden baffle to aerate and remove sulphur. Aeration is the only treatment provided.

(3) Reservoir

The water is pumped from the 28,000 gallon reservoir by a high lift pump to 1000 gallon pressure tank. The high lift pump operates automatically between the pressures of 35 to 50 psi.

(4) Distribution System

The distribution system consists of 1¼ inch to 3 inch diameter galvanized pipe. See plan for distribution system.

There are at present 25 services connected to this system. The yearly rate is $24.00.

IV OTHER SYSTEMS

There are two other smaller systems. One system owned by Mr.B.McFarlan serves 4 houses through 1½ inch plastic pipe. The water is obtained from 130 foot deep well and the yearly charger per service is $20.00. The other system owned by Mr.Beaty uses two 82 foot deep well to supply 4 houses, a turkey farm and processing plant.

SUMMARY OF WATER ANALYSES FROM THAMESFORD SUPPLIES

Supply	Date 1960	Hardness as $CaCO_3$	Alk. as $CaCO_3$	Iron as Fe	Chloride as Cl	Fluoride as F	pH at lab.	Acidity as CO_2	Sulphides as H_2S	Remarks
Hossack's	May 11									
before reservoir		170	180	0	3		7.8	10		Well #2 which
from reservoir		166	180	0	3		7.9	10		is 110' deep
	May 3	172	182	0	6	1.1	7.7	3.3	0	
	June 11	191	194	1.4	5	1.3				Well #1 which is 100' deep
MacFarlane	May 3	220	206	0.16	12	1.2	7.7	6.8	0	Well 130' deep
Beaty	May 3	346	234	0.32	39	0.9	7.4	15.4	0	Two wells 82' deep-3' into rock
Thamesford	May 3	556	196	0	20	2.6	7.5	5.2	0	Both samples
W.W. Co.	June 11	573	201	0.2	17.0	2.3				from well #2 which is 234' deep. Well #1 is 174' deep used as standby only.
Springs S. of Thamesford	May 3	260	220	0	11	0	7.8	2.9	--	
Noad	May 6	354	200	0	5	2.2	7.7	11.0		Both samples
	Jan. 26	312	162	0	13	--	7.8		0	from well #2 which is 250' deep- 164' into rock

SUMMARY OF WATER SYSTEMS

Water Supply	Depth of Well	Number Services	Capacity of Source	Capacity of Pumps: Well Pump	Capacity of Pumps: Distribution Pump	Remarks
Hossack						
Well #1	100'	100		12 G.P.M.	250 G.P.M.	Well #1 used for standby. Iron content in well #1 is above recommended limit.
Well #2	110'			67 G.P.M.		Fluoride content is ideal softest of reported water supplies
			Total plant capacity= 114,000 G.D.+ 30,000 gal. storage			
Thamesford W.W.Co.						Well #1 not used due to presence of hydrogen sulphide. Fluoride content is above the recommended limit.
Well #1	174'	200		Unknown	42 G.P.M.	
Well #2	234'			50 G.P.M.		This is the hardest water of reported supplies
			Total plant capacity = 61,000 G.D. + 25,000 gal. storage			
Noad						Well #1 not used due to presence of hydrogen sulphide. Fluoride content is above the recommended limit.
Well #1	120'	25	6 G.P.M.	6 G.P.M.	60 G.P.M.	
Well #2	250'		50 G.P.M.	40 G.P.M.		Relative to the other reported supplies the water is of medium hardness.
			Total plant capacity = 66,000 G.D.+ 28,000 gal. storage			
Beaty						Ideal fluoride content. Iron content is at upper limit. Relative to the other reported supplies the water is of medium hardness.
Well #1	82'	5				
Well #2	82'		20 G.P.M.			
MacFarlane						Ideal fluoride content. Is second softest water of reported supplies. Hydrogen sulphide present.
Well	130'	4	86 G.P.M.			

FUTURE WATER SUPPLY

I GENERAL

The development and operation of a number of private wells and public distribution systems in a municipality is both unusual and likely to be inefficient. At present there are some six private water systems serving a varying number of consumers. It can be appreciated that due to the varying quality of the water from these wells and the physical difference in the systems the service provided to the customers will not be uniform. The maintenance, operation, and charges made to the customers in the various systems will not be standardized. In addition, some of the proposed new subdivision developments are by people who are not residents in the municipality. These persons have no desire to operate water systems after they have sold the house. All of these factors will eventually cause the consumers to demand that the water works systems be taken over by the municipality. In order to minimize these future operational problems the municipality should adopt standards for all future installations.

II WELLS

The drilled wells in the area have been reported at varying rates, how the actual capacity of these has not been accurately determined. In some cases the pump motors have been throttled down or smaller pumps installed as the wells have not been able to produce at a high rate.

The quality of the water from the drilled wells has been

variable. All water would be termed hard and in some cases there has been hydrogen sulphide and iron reported. In all cases where treatment has been instituted it is reported that a satisfactory water is produced after aeration.

The drilled wells in the area are at varying depths from 80 feet to 250 feet. On the basis of hydro costs the less expensive water will be produced from the shallower wells.

When the operation of the water systems is assumed by the municipality it will be necessary to decide on the best source. If a sufficient quantity of good quality water, cannot be obtained from one centrally located well, then it will be necessary to operate the more efficient of the existing wells. At present there is not enough reliable information available to make an assessment of the best source.

III SPRINGS

An alternative future source of water supply for the area is from some springs. There are located approximately three-quarters of one mile to the south of Highway #2, the main street. The springs are visually apparent in a wooded area about 500 feet west of the Thames River. In general there is some 25 feet of sandy gravel on top of an impervious layer in the village area. It is likely that the springs are fed from this top porous area. A preliminary examination of the springs indicates that there would be sufficient quantity available to meet the future requirements of the municipality.

The chief advantage of the spring supply would be that the water would be free of hydrogen sulphide. The disadvantage to this supply would be that it could be contaminated by proposed housing developments in the south part of the municipality. This would include the Hoffman subdivision. Therefore, if the springs are to be considered as a future water source any housing development in their watershed should only be allowed on the basis of installing sanitary sewers. The collected sewage could be treated at an appropriately located oxidation lagoon. Surface drainage would also be directed so that it did not contaminate the springs. The immediate area surrounding the springs would be purchased and fenced. In addition, the water would be chlorinated.

FUTURE DISTRIBUTION SYSTEMS

The future integration of the private water distribution systems will be less costly to the municipality if it now sets standards for water main installations. In order to provide adequate fire protection it will be necessary to require a minimum of 6" diameter mains for all side streets. Larger diameter mains will eventually be required in the central area and from the source or sources of supply. This need will become more apparent with growth in the area.

It should be noted that the excavation cost per foot for 6" diameter mains is the same as for smaller size pipe. The difference in cost then between installing adequate and inadequate size mains is only the difference in the pipe cost. For 6" and 4" diameter mains this would be about 80¢ per foot or some $60 per lot. This cost will not make a significant increase in the price of new lots. However, this increase might be sufficient to encourage the development of lower standard water systems and subsequently less expensive lots in the surrounding townships. This type of development will eventually pose expensive servicing problems for the concerned townships. For this reason the Townships of East Nissouri and North Oxford should also adopt the same standards for water distribution systems in all new subdivisions.

NEW SUBDIVISION WATER SUPPLY DEVELOPMENTS

At present the two large subdivision developments in the area are those owned by A.Noad and F.Hoffman. In addition, there is a new proposed subdivision to the north-east of the municipality. The reported capacity of Mr.Noad's existing two wells is sufficient to meet the requirements for his subdivision. The F.Hoffman development contains 253 lots and as yet the source of water supply has not been decided. Mr.Hossack has offered to extend his system to service this area. The ultimate water requirements of the Hoffman area will be some 80,000 gallons daily.

Mr.Hoffman has indicated that he would prefer to have the water system for his subdivision developed and operated by the municipality. It would therefore be an opportune time to begin the development of a municipal water system. The system necessary for this development would serve as the core for the village water works. The existing systems can be acquired by the municipality and improved as the need arises and when money is available. Until a municipal system is formed it is likely that water can be provided to new homes in this area by the Hossack system.

SUMMARY & RECOMMENDATIONS

I SUMMARY

The continued development of private water supply systems in Thamesford is inefficient and will eventually result in expensive water works replacements for the municipality. For satisfactory uniform water service in the village the demand for a municipal system is inevitable and the longer the delay the higher the ultimate cost.

The choice of the source or sources of supply will be determined on the basis of quality, quantity and economy. Most of the present water suppliers have encountered hydrogen sulphide in varying amounts in the different well waters. In all reported cases this has been satisfactorily removed with simple aeration. It is not likely that hydrogen sulphide would be present in the spring water. This is one of the reasons why the springs would be a desirable source. It will of course be necessary to protect the spring watershed from pollution. From the point of view of hardness the Hossack supply is the best source. In addition, this supply has an ideal amount of fluoride.

All past well capacity tests have not been adequately carried out for determining their ultimate capacities. It would therefore be necessary to have a properly supervised ground water survey conducted in order to decide on the future source or sources. The question of the most economical source would also be considered at this time.

The spring supply has the advantages of being free from hydrogen sulphide and iron. Relative to the wells of the area it is of medium hardness. On the basis of the writer's observations during a period of relatively high water table, and reports by local residents there is sufficient quantity here to meet all future municipal requirements. Before this could be accepted as a municipal source, flow measurements should be made during low summer flow periods. If this source is to be used, pollution in the watershed of the springs should be controlled. This would require that all future house developments in the south-west part of the municipality be on the basis of sanitary sewers.

A satisfactory municipal water distribution system should be capable of supplying a reasonable degree of fire protection. With this in mind the minimum size main acceptable in a municipal system should be 6" diameter. On this basis none of the existing distribution systems is satisfactory. The minimum diameter for future water mains should be 6". When a municipal water works is formed there should be a plan for the eventual elimination of all undersized mains. This can be planned to take place as money becomes available.

Development of the Hoffman subdivision is imminent. It will require some time before the previously mentioned ground water survey can be carried out and a municipal water works system instituted. For this reason the temporary supply of water to new homes in this area could be from the Hosack system. This system should be capable of supplying an additional 25 homes.

It is not known how soon development will occur in the subdivision to the north-east of the municipality. Should this occur prior to the formation of a municipal system, then an effort should be made to secure water from one of the existing wells in the area. Possibly Mr.Dennison's well would be satisfactory for this purpose.

The formation of one municipal water system in a growing area is both the efficient and desirable way of providing this service. In order for Thamesford to have effective minimum requirements for water servicing, it will be necessary for the surrounding Townships of East Nissouri and North Oxford to adopt similar ones. If these minimum requirements are not adopted in any of the neighbouring municipalities, where urban growth occurs, then it can be expected that there will develop eventually in these areas inadequate water systems. The subsequent replacement and improvement of these systems is expensive to both the water consumer and the municipality.

II RECOMMENDATIONS

1. Thamesford, East Nissouri Township and North Oxford Township should require that all water mains in future subdivisions be a minimum size of 6" diameter.

Thamesford

2. A municipal water works system should be developed. This system should be capable of supplying 160,000 gallons daily.

3. Existing water supplies should be acquired by the municipal water authority. Water rates should be set so that

funds will be available for the replacement of all inadequate mains. The present sources of water supply would be utilized until a municipal source or sources are established.

4. A ground water survey should be made of the area in order to determine the future municipal water source. If desired, the Ground Water Branch of this Commission would be available for supervision of this survey.

5. If the springs are to be utilized as a municipal water source then control must be exercised to prevent pollution. This would require sanitary sewers for housing developments in the watershed of the springs and the careful direction of surface water drainage. The immediate area of the springs would be purchased and fenced. In addition, the water would be chlorinated.

6. For the present, new homes in the Hoffman subdivision could be supplied with water from the Hossack system. Homes in the proposed subdivision to the north-east of the municipality could possibly be supplied from the Dennison well. In any case the Police Village should establish a municipal supply as soon as possible, so that it will not be necessary to develop an additional private water system in the area.

VILLAGE OF THAMESFORD

TOWNSHIP OF EAST NISSOURI

TOWNSHIP OF NORTH OXFORD

CANADIAN PACIFIC RAILWAY

No 100 HIGHWAY

THAMES RIVER

HIGHWAY No 2

TOWNSHIP BOUNDARIES

Road between concession 9 & 10

Mc CARTY ST.

BYRON ST.

KING ST.

WASHINGTON ST.

DELATRE ST.

GEORGE ST.

CHURCH ST.

ALLEN ST.

BROCK ST.

ANDREW ST.

PATRIC ST.

MIDDLETON ST.

PROPOSED SUBDIVISION

PROPOSED SUBDIVISION (HOFFMAN)

TURKEY FARM & PROCESSING PLANT

MIDDLE BRANCH

925' 950' 975' 900'

LEGEND

- THAMESFORD WATER SUPPLY Co.
- NOAD SUPPLY
- HOBSACK SUPPLY
- BEATY SUPPLY
- MacFARLANE PRIVATE SUPPLY
- SPRING AREA
- WELLS
- PROPOSED SUBDIVISION

NOTE:- ALL WATER AREA BOUNDARIES ARE APPROXIMATE

SCALE

400 200 0 400 800 Ft.

OWRC. TORONTO. MAY 1960 S.H.

DWG No 60-42